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UNITED STATES DEPARTMENT OF AGRICULTURE

Control of the Garden Webworm in Alfalfa[1]

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Alfalfa plants showing injury by the garden webworm.

The garden webworm[2] is a serious pest of alfalfa in most of the central, western, and southern States. It has caused extensive damage to alfalfa in California, Nebraska, Iowa, Missouri, New Mexico, Kansas, Oklahoma, and Texas. This webworm also occurs in South America and Mexico. The second and third annual cuttings of alfalfa may be entirely destroyed by the pest.

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[1] This leaflet supersedes Farmers' Bulletin 944, Controlling the Garden Webworm in Alfalfa Fields, by E. O. G. Kelly and T. S. Wilson. Some of the illustrations are used through the courtesy of R. C. Smith, of the Kansas Agricultural Experiment Station.

[2] *Loxostege similalis* (Guen.).

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Garden webworms were first noticed in injurious numbers in the United States in 1861. In that year and in 1864 large acreages of corn and garden crops were destroyed in the Middle West. The first widespread injury to alfalfa occurred in 1900 in States west of and adjacent to the Mississippi River and in Texas, and probably one of the most extensive outbreaks in this crop in Kansas in July 1924. Since that time there have been many outbreaks, notably in 1947, 1948, and 1949.

Appearance and Habits

The larva, or caterpillar, is the stage that causes plant injury. Soon after hatching the caterpillars begin feeding on the under surfaces of alfalfa leaves. As the larvae grow they web together the tops of the plants and eat the portions within the web masses, until nothing is left except the skeletons of leaves and stems. The presence of the web masses and the wilted appearance of the infested fields readily identify the cause of the injury. Many fields show damage only in irregular spots, usually on sandy upland, but a sufficient number of larvae may ruin an entire cutting of a crop. The larvae also feed on corn, sorghum, soybean, wheat, pigweed, lambsquarters, Russian-thistle, and many truck-crop and garden plants. If disturbed they drop quickly to the ground on silken threads, where they wriggle about rapidly and hide in rubbish.

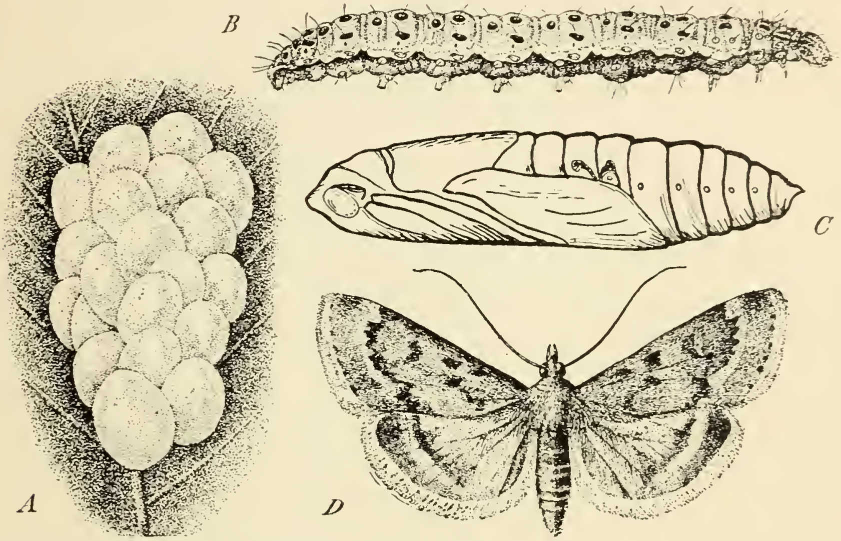
When fully grown the larvae are greenish brown and about ¾ inch long. Upon each body segment on each side of the back are three tiny black spots arranged in triangles, and on each spot is a short, stiff hair. They descend to the ground and enclose themselves in silken cocoons in trash and leaves or in the soil just beneath the surface. In these cocoons they transform into light-brown pupae. After about 10 days the pupal cases split open and the adult moths emerge.

The moths are reddish brown to dark gray, with markings on the wings. After emerging they remain quiet for several hours until their wings become fully expanded. They then have a wing spread of about ¾ inch. When disturbed, the moths make short flights of 10 to 25 yards, and usually alight on some hidden part of the foliage. The distance the moths may fly is not known, although doubtless they migrate several miles. They are most active at night, and are strongly attracted to lights.

Within a few days after the females emerge they mate and begin to lay eggs. They deposit their eggs in masses of 40 to 50 overlapping one another on the under sides of the leaves, usually those near the top of the plant. One moth may deposit as many as 300 or 400 eggs. The moths live only a short time—some of them only a few days. They feed on the nectar in the alfalfa blossoms.

The eggs are oblong oval and about $1/40$ inch in diameter. At first the egg masses are almost transparent and are difficult to detect against the green background of the leaves, but about a day before hatching they become slightly darker. After 4 or 5 days the eggs hatch into tiny larvae, or caterpillars.

In the latitudes of Kansas and Oklahoma there are at least four generations annually. The first moths appear in March or April, and larvae that hatch from their eggs begin to feed in the alfalfa fields in May. These larvae mature the latter part of May, and the moths emerge early in June. Another generation of moths comes out late in June and continues to mid-July. The webworms produced by this generation usually do the most serious damage to alfalfa in Kansas. A third generation of moths appears late in July and continues throughout August. Individuals of the fourth, or a possible fifth, generation may be present in the alfalfa fields for several weeks thereafter. The insects overwinter as larvae or pupae within cocoons in the soil.



Stages of the garden webworm: *A*, Eggs; *B*, caterpillar; *C*, pupa; *D*, moth, or parent. All much enlarged.

In the latitude of southern Texas the insects are active in the fields during the entire year. They complete their development in 30 to 35 days in warm weather, but during the cooler months they require a longer time.

How to Control the Garden Webworm

Timely Cuttings

In fields of hay alfalfa the garden webworm may be controlled by properly timed cuttings. The first cutting in an infested field should be made as soon as the plants have come well into bloom, or when the young shoots begin to appear near the base of the plants. If the hay is removed at this time, the larvae left in the field will perish through lack of food, exposure to heat, and the work of predators.

Some farmers cut any young alfalfa plants less than 6 inches in height as soon as they detect the pest upon them. However, the hay from such cuttings has no commercial value. Moreover, too frequent cutting injures the plants and thereby reduces the stand, with consequent invasion by grasses.

Clean Cultivation

Clean cultural methods are also of value in controlling this pest. It is important that fields, fence rows, and waste ground nearby be cleared of pigweed, lambsquarters, and Russian-thistle. The webworm often builds up its populations on such weeds and later migrates to alfalfa.

Use of Insecticides

Newly seeded fields of alfalfa that become infested with garden webworms may be protected by dusting or spraying with calcium arsenate. The dust should be applied at the rate of 10 pounds, and the spray at 4 pounds in 100 gallons of water, per acre. However, fields so treated should not be used for hay or pastured with livestock.

The new insecticide toxaphene will also control this insect. A spray applied at the rate of 2 pounds or a dust at 3 pounds of toxaphene per acre should give good control if applied when the larvae are small. After becoming half grown the worms feed largely within their webs, and cannot be controlled so easily.

Alfalfa being grown for seed should be kept under careful observation, and if webworms become numerous the crop should be treated with an insecticide. Unless such fields are carefully watched, and treated if necessary, the damage may increase rapidly and render the crop practically worthless.

CAUTION.—Forage treated with toxaphene should not be fed to dairy cows, poultry, or animals that are being finished for slaughter. Although this poison is less toxic to bees than are many other insecticides, when alfalfa is in bloom it should be applied only before 7 a. m. or after 7 p. m., when the bees are not active in the field.

Natural Enemies of the Webworm

Enemies of several kinds prey upon the garden webworm and assist in its control. The more effective of these enemies are common toads, horned toads, birds, barnyard poultry, and certain species of ants and beetles. The common toad is probably the most useful; stomachs of individual toads have been known to contain as many as 70 worms. Several parasites also may assist in preventing its increase. Seven species of wasplike parasites and two species of flies have been reared from larvae and pupae of the webworm.

Notwithstanding the helpful work of the natural enemies, it would be unwise for the alfalfa grower to defer any active control measures in the expectation that some of the enemies eventually would subdue the pest.

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